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TEACHING OF PSYCHOLOGY

MS. 1276 (21 pages/paper: \$4; fiche: \$2)

History of Psychology in Biography: A Bibliography

LUDY T. BENJAMIN, JR. and KATHRYN L. HEIDER
Nebraska Wesleyan University

One approach to teaching and studying the history of psychology is through the use of biographical and autobiographical materials. Indeed these aids can be used by students and teachers in any of the subfields of psychology. Many recent psychology textbooks have added this kind of material to the more traditional psychological fare, apparently reflecting a growing interest in biography. Usually these "biographies" are extremely brief, even more so than those sketches found in the psychological literature as obituaries, sketches associated with award presentations, and interviews. While they are a valuable source of information, they do not qualify as biographies. Complete biographies and autobiographies are less abundant, and like other kinds of biographical material, they are difficult to systematically locate. The coverage is further limited by the inordinate amount of attention given to a minority of the most influential figures in psychology. The present paper lists complete references for more than 200 of these biographies and autobiographies. It is hoped that this list will serve as an impetus to this form of life history material which offers us another way to learn and understand psychology.

GENERAL PSYCHOLOGY

MS. 1277 (17 pages/paper: \$4; fiche: \$2)

Development of Psychology in Latvia

LEONARD ZUSNE
University of Tulsa

The history of academic and applied psychology in Latvia is presented. It covers briefly the historical and geopolitical background of the area and its inhabitants and details developments in psychology from mid-nineteenth century to 1918, the years of an independent Latvian state (1918-1940), and post-World-War-II events in Latvian SSR. Biographies of important contributors to psychology are presented and their work described. The work of the Riga Municipal Institute of Youth and Vocational Research is featured. Some thoughts are offered as to the reason why applied psychology (psychotechnology) flourished in Latvia while academic psychology did not fare as well.

METHODOLOGY AND RESEARCH TECHNOLOGY✓ **MS. 1278** (21 pages/paper: \$4; fiche: \$2)**Construction of a Personal Autonomy Inventory**

D. J. W. STRÜMPFER

University of Port Elizabeth, South Africa

The inventory contains three factorial scales: independence of judgment, moral relativism, and adventurousness. The initial item pool was based upon descriptions of the need for autonomy (positive) and for independence (negative). It contained 415 items adapted from existing inventories, based upon theoretical formulations and generated through brainstorming; deletions, combinations, and editing reduced it to 210 items. Six psychologists evaluated these items for content validity and the list was reduced to 199. The preliminary English form included the Crowne-Marlowe Social Desirability Scale, and was completed by 233 English-speaking adult males; 216 Afrikaans-speaking males completed an Afrikaans version. Both samples contained subjects from diverse occupational backgrounds, between ages 19 and 60. Responses were on a 7-point scale. Items with extreme response frequencies on either language form were eliminated. A total autonomy score, based on 150 items on which four raters could readily agree as to the autonomous response direction, was used to obtain item-total correlations. On the English form, each item was also correlated with the Crowne-Marlowe scale and an index was calculated that indicated an item's content saturation with the effects of desirability removed; items showing a negative index were discarded. The remaining 93 items were factor analyzed separately for the two samples. Both Varimax and Direct Quartimin rotations for three and four factors were carried out. High factor reliabilities obtained across language groups. For scale construction, the three-factor solutions were used, and items loading above .30 on each factor but below .25 on the other two were included. Corrected odd-even reliabilities in the construction samples ranged from .70 to .84.

MS. 1279 (47 pages/paper: \$5; fiche: \$2)**Development of an Enlisted Psychomotor/Perceptual Test Battery**

DAVID R. HUNTER

*Personnel Research Division, Lackland Air Force Base, Texas**U.S. AFHRL Final Report, 1975 (Nov), No. TR-75-60.*

A battery of seven psychomotor/perceptual tests, developed by Biotechnology, Inc., of Falls Church, Virginia, was administered to 380 airmen assigned to the 3701 Personnel Processing Squadron at Lackland Air Force Base, Texas. A paper-and-pencil battery of 21 tests was also administered to the airmen. The objectives of the project were to determine the psycho-

metric characteristics of the psychomotor/perceptual battery and to compare the performance of high- and low-ability airmen, as determined by Armed Forces Qualification Test (AFQT) scores. Analysis of the data indicated that the measures obtained from the psychomotor/perceptual battery were generally highly reliable. Factor analyses resulted in the identification of six factors that were specific to the psychomotor/perceptual battery, four factors that were specific to the paper-and-pencil measures, and one factor that was common to both batteries. The sample of subjects was divided into upper and lower groups based upon AFQT scores. The performance of the upper and lower groups on the paper-and-pencil and psychomotor/perceptual batteries was compared and differences evaluated for statistical significance. It was found that the differences between the upper and lower groups were generally much smaller on the psychomotor/perceptual tests than on the paper-and-pencil measures. Recommendations for subsequent research and development are given.

✓ **MS. 1280** (21 pages/paper: \$4; fiche: \$2)

Longitudinal Studies of Attitude Change: Issues and Methods

LAURIE BROEDLING, MARTIN WISKOFF, and JAMES HERBERT
Navy Personnel Research and Development Center, San Diego, California

This report makes available in condensed form the methods for performing longitudinal studies of attitude change and the issues associated with these methods. It represents a state-of-the-art review of such methods, and the material covered spans the disciplines of psychology, sociology, and statistics. It is meant to provide a brief description of the tools available, references to more detailed descriptions, and an overview of the theoretical and practical issues involved in execution and interpretation to those wishing to employ longitudinal methodology. The report is divided into the following four sections: (a) Longitudinal design and cross-sectional design are compared in terms of relative advantages and disadvantages. (b) Theoretical issues associated with studies done over time, such as the overcorrection/undercorrection problem, and the contribution of response uncertainty to the overall variance, are discussed. (c) Actual methods are described; this section is subdivided into (a) experimental designs, (b) quasi-experimental designs, and (c) statistical techniques. This section also includes references to actual studies in which these methods were employed. (d) Practical considerations in doing longitudinal research are discussed. The major conclusion drawn in the report is that while sophisticated methods are available for use, overall development of the field is being hampered because work progresses independently in several disciplines.

HUMAN EXPERIMENTAL PSYCHOLOGY

MS. 1281 (8 pages/paper: \$4; fiche: \$2)
Rated Pleasantness of Sixty English WordsANDREW T. ABELL
Westminster College

In recent years, some efforts have been made to alleviate the problem of insufficient normative data regarding rated pleasantness of verbal materials. The purpose of this paper is to provide further normative information regarding English words. Measures of central tendency and variability are presented for each of 60 English words rated for pleasantness on a 7-point scale by 126 Pennsylvanian undergraduates. A high rank-order intergroup correlation based on all 60 words, $r_s(58) = .980$, $p < .001$, and a high rank-order correlation between ratings of 48 of the words made initially by a Louisiana sample and then 5 years later by the Pennsylvania group, $r_s(46) = .983$, $p < .001$, indicate the stability of the ratings. The fact that the cross-cultural correlation was very high in spite of a difference in the proportion of males and females in the two samples tends to substantiate an earlier conclusion: Pleasantness values for male and female college students are largely interchangeable. In addition, the high cross-cultural correlation, as such, suggests that pleasantness norms generated by a sample of subjects in one part of this country are largely applicable elsewhere. Finally, the fact that this cross-cultural correlation was high in spite of a 5-year period separating the collection of the two sets of data would seem to indicate that pleasantness norms can be used with a great deal of confidence even if they are several years old.

MS. 1282 (29 pages/paper: \$5; fiche: \$2)
Interdisciplinary Directory of Scientists Engaged in the Study of Eye Movements—Third EditionRICHARD A. MONTY and B. DIANE EBERLY
U.S. Army Human Engineering Laboratory, Aberdeen Proving Ground, Maryland

This directory updates two earlier editions, Ms. 833 and Ms. 997, and it lists names, addresses, phone numbers, educational background, and interests of approximately 175 scientists involved or interested in the study of eye movements and related processes. Entries were made on a voluntary basis and a form is enclosed for those who wish to be included in subsequent editions.

PHYSIOLOGICAL AND ANIMAL PSYCHOLOGY**MS. 1283** (12 pages/paper: \$4; fiche: \$2)**Appetitive-Appetitive Transfer under Conditions
of Incentive Contrast**W. MILES COX and CHRISTOPHER L. CUNNINGHAM
University of Oregon Health Sciences Center, Portland

Two groups of rats were initially trained to traverse a runway for a small food reward (1 pellet), while a third group received a large reward (10 pellets). Next, in a chamber that was similar to the goalbox of the runway, one of the small-reward groups received pairings of the large food reward and a tone conditioned stimulus whereas the remaining groups were given random presentations of the two stimuli. The animals were then returned to the runway for trials with the large reward, during which the auditory stimulus was on. These trials were followed by extinction trials and a test for spontaneous recovery. During original training, performance was more rapid for the group that received the large reward. During the test phase, the auditory stimulus depressed running speeds among the subjects for which this stimulus had been paired with food, but the tone had no effect during extinction and spontaneous recovery. In addition, the animals that received the successive upshift in magnitude of food reward in the runway following random tone-food presentations did not perform differently than the animals that had always received the large reward. Thus, these results provide no evidence either for the incentive-motivational properties of conditioned appetitive stimuli or for positive incentive contrast produced by successive upshifts in magnitude of food reward.

DEVELOPMENTAL PSYCHOLOGY**MS. 1284** (13 pages/paper: \$4; fiche: \$2)**Prospective Remembering and External-Retrieval Cues**JOHN A. MEACHAM and JENNIFER DUMITRU
State University of New York at Buffalo

Prospective remembering—remembering to carry out specific activities at some future time—was investigated by asking children to remember to take an envelope when returning to the classroom. This investigation focused on episodic prospective remembering (memory for actions performed either infrequently or on an irregular basis), rather than habitual prospective remembering (memory for actions that are engaged in routinely). The subjects were 41 5-year-old children and 41 7-year-old children. Each child was asked to take an envelope when returning to the classroom and was then

distracted for 7 minutes. Remembering was compared in three different conditions: (a) In the cue condition, where children were provided with an appropriate picture to use as an external retrieval cue; (b) in the elaboration condition, where children were also coached in the use of the cue; and (c) in the control condition. No significant differences were found among these conditions. A greater number of 7-year-olds than 5-year-olds remembered ($p < .001$). Thus, the results suggest that young children do not take advantage of external retrieval cues to facilitate episodic prospective remembering, at least when the task and conditions are those of the present investigation.

MS. 1285 (16 pages/paper: \$4; fiche: \$2)

**Separation of Attachment Figures: Responses of Young Children
in a Supportive Setting**

ANNE BROWN DOLAN and ADAM P. MATHENY, JR.
University of Louisville

In the Louisville Twin Study, observations were made of children's initial reactions to their mothers' departure from a playroom and their characteristic behavior during maternal absence. Between 75 and 290 children were observed during visits made at 3, 6, 9, 12, 18, 24, and 30 months of age. In this setting, intended to be supportive and interesting, most children showed little distress upon maternal departure, and considering all visits, no more than 23% of the children were observed to be crying—a selective response considered by others to be especially indicative of attachment. Furthermore, during maternal absence most children were not upset, and showed a developmental trend for increasing interest in and exploration of the environment. At 12 and 18 months of age, however, a decrease in (noncrying) vocalizations was observed during maternal absence, suggesting that this "quieting" effect might be a sensitive index of attachment. Since so many settings for young children are contrived to be interesting and supportive, the few behaviors usually examined as indexes of children's attachment are likely to occur infrequently. It is suggested that additional behaviors be examined as markers of the development of attachments, within the context of the developing motoric, cognitive, and interpersonal competencies of children.

✓ **MS. 1286** (128 pages/paper: \$9; fiche: \$4)

Investigation into the Social Roots of Competence

IRA J. GORDON
Institute for Development of Human Resources, University of Florida

This project examined the relationships between three observation schedules (Interaction Process Analysis, portions of the Escalona-Corman Schedule, and the Watts Home Scale) of mother-infant interaction during the first

year of life and the relationship between their measures and competence at age 1. On seven occasions, 63 low-income families involved in a parent education intervention project were videotaped six weeks apart, beginning when the infant was 3 months old. Competence was measured by the Bayley Mental Development Index, sections of White's Measure of Social Competence, and a local set of Piagetian-type tasks. The observation items and competence items were factor analyzed separately, yielding five observation factors and four competence factors. The observation schedules were independent of each other and related to different competence factors. Relationships were examined both for single items and factors and by means of multiple regression of observation factors for each competence factor at each occasion. Competence was predictable from observation as early as 19 weeks of age. The Piagetian tasks were most predictable, and the teaching transactions factor from the Interaction Process Analysis Schedule was most predictive. There were sex differences with observed affect transactions more related for boys and teaching transactions for girls. The infant's age was also important, especially for boys. The project demonstrated that within a social class there are differences in maternal-baby behavior that related to performance on intellectual measures such as the Piagetian activities and the Bayley Scales. This underlies the importance both of studying infants in the first few months and of analyzing by sex. The use of three observation schedules and the fact of their independence and differential predictability stresses the complexity of the phenomena and of the importance of this type of naturalistic, systematic observation.

MS. 1287 (30 pages/paper: \$5; fiche: \$2)

Fourth- and Fifth-Grade Norms for Verbal Items in Six Categories

SUSAN KARP MANNING and JOANN FERRARA
Hunter College of the City University of New York

A set of associations to category names similar to those collected by Battig and Montague in 1969 with college students, was generated by using 195 fourth- and fifth-grade children from public and parochial schools in New York City during 1973-1974. The actual categories normed were beverages without alcohol, colors, crimes, parts of the body, professions, and vegetables. Within each category, instances were ranked in order of frequency. Further breakdowns by sex and school were made within categories. Correlations were reported between the children's data and the Battig and Montague college student sample. The correlations indicate a large amount of stability for association norms even in the presence of age and geographical differences. These data should be useful to researchers in developing matched categorized lists. Although such lists have frequently been used to study the organizational processes involved in children's learning and memory, normative data have not been readily available. Additionally, the actual words generated might be useful for those interested in developmental linguistics or in the types of responses generated by urban children.

SOCIAL PSYCHOLOGY

✓ MS. 1288 (286 pages/paper: \$15; fiche: \$6)

**Subjective Culture and Communication:
A Puerto Rican-U.S. Comparison**LORAND B. SZALAY and JEAN A. BRYSON
American Institutes for Research, Washington, D.C.

Comparative analyses of United States and Puerto Rican student groups' reactions to selected verbal and pictorial stimuli are presented in two studies. In the first study the inferences drawn from word-stimulated and picture-stimulated associations produced by the United States and Puerto Rican groups were compared at three levels. At the level of single selected stimuli, the inferences revealed group-characteristic meanings, perceptions, and evaluations of specific words and pictures. At the level of domains represented by 16-20 stimuli, the analysis was informative on broader problem areas such as family and education. At the third level, conceived as representing subjective culture, the inferences from hundreds of thousands of responses obtained to 160 stimulus words and 80 pictures produced information on cultural priorities and on perceptual and attitudinal dispositions. The high degree of consistency in findings obtained by the two methods suggests that word associations inform generally on cultural dispositions independently from the mode of elicitation. The practical value of word associations stems from their potential to convey group-specific perceptual and attitudinal priorities and cultural dispositions that are frequently below the level of awareness or that are vulnerable to factors of social desirability and rationalizations when approached by direct methods of questioning or scaling. The second study explored the utility of word- and picture-stimulated associations in assessing the effects of communications on United States and Puerto Rican groups. Associations to key themes and pictures strategically chosen from the selected piece of communication were obtained both before and after the presentation of each selected editorial or film. The results obtained from the comparison of responses obtained before and after the communication indicate that word associations provide a solid empirical base for assessing the perceptual and attitudinal effects along spontaneously emerging natural dimensions. A comparison of the United States and Puerto Rican culture groups has shown that the differences observed were generally in line with cultural dispositions identified in the first study.

✓ **MS. 1289** (42 pages/paper: \$5; fiche: \$2)

**Recent Research on Helping Behavior:
An Overview and Bibliography**

SING LAU and BRIAN F. BLAKE
Purdue University

An overview of major themes in altruism research during the 1969-1975 period is presented. Those problems specific to each approach, as well as problems believed to plague the bulk of current studies, are briefly described. Several areas of research (e.g., processes involved in the receiving of help) that appear particularly promising are also noted. The bibliographic references of over 400 studies conducted during the 1969-1975 period are listed.

✓ **MS. 1290** (18 pages/paper: \$4; fiche: \$2)

**Achievement Orientation of Adolescent Women of Hawaiian-,
Japanese-, and Pilipino-American Descent**

SANDRA KAEKO MACHIDA FRICKER
California State University, Chico

EMMY E. WERNER
University of California, Davis

A comparison of levels of aspiration and antecedents of achievement orientation was made based on interviews with Hawaiian-American, Japanese-American, and Pilipino-American high-achieving women and their mothers. Hawaiian-American women had more traditional life goals and lower educational and vocational aspirations; Japanese-American and Pilipino-American women had more contemporary views of the female role and higher educational and vocational aspirations. In all three groups, mothers were more influential than fathers as role models for their high-achieving daughters, but the high-achieving Pilipino-American women felt more ambivalent toward their mothers.

PERSONALITY

MS. 1291 (8 pages/paper: \$4; fiche: \$2)

**The "Likableness" of 555 Personality-Trait Words
Ten Years Later**

EDWARD S. CONOLLEY and GEOFFRY M. MARUYAMA
University of Southern California

Much of the empirical research applying Anderson's theory of information integration to the problem of impression formation relies on the likableness ratings (*L* values) of 555 personality-trait words obtained by Ander-

son in 1964. Because of this extensive use in a theory of cognitive algebra with theoretically specified integration rules, it is important to have contemporary *L* values. To provide these values the entire set of 555 words was again scaled in 1974. Randomized sets of the trait words were rated on the original 0-6 scale by 100 subjects. The words are presented in order of decreasing likableness along with their mean *L* values and standard deviations.

MS. 1292 (75 pages/paper: \$6; fiche: \$2)

**One Thousand References on Sibling-Constellation Variables:
Ordinal Position, Sibship Size, Sibling Age-Spacing,
and Sex of Sibling**

DANIEL S. P. SCHUBERT
Case-Western Reserve Medical School

MAZIE EARLE WAGNER
State University of New York College at Buffalo

HERMAN J. P. SCHUBERT
Veterans Administration Hospital, Buffalo, New York

This 1,035-item bibliography on family-constellation variables includes references from 1900 through 1975. One-word annotations to each reference indicate the content of the article as it relates to sibling-constellation characteristics and to correlates of such characteristics. Sibling-constellation variables are ordinal position, sibship size, sibling sex, and age-spacing. Demographic factors included are social class, race, education, occupation, intactness of family, age of father (mother), and absence of father. Personality characteristics often studied in relation to sibling-constellation properties include physical and mental health, productivity, and nature of interpersonal relationships. About 50 articles deal with creativity, 30 with volunteering, 400 each with sibling spacing and sex of sibling, 190 with family size, and several hundred with ordinal position (firstborns versus later borns; eldest, middlers, youngest, and onlies). For any article, the absence of a topic in the annotations does not necessarily indicate the absence of such content. The bibliography includes reviews and articles on methodology.

Achievement Orientation of Adolescent Women of Hawaiian-, Japanese-, and Pilipino-American Descent: Sandra Kaeko Machida Fricker and Emmy E. Werner. See Ms. 1290, page 69.

CLINICAL PSYCHOLOGY**MS. 1293** (21 pages/paper: \$4; fiche: \$2)**Bibliography: Milieu Therapy and Administrative Psychiatry**

PETER B. ZELDOW and PAULA ANSELL

Veterans Administration Hospital, Syracuse, New York

The books and articles listed in this 167-item bibliography share the idea that aspects of a psychiatric patient's interpersonal environment can influence his or her treatment for better or worse. The bibliography is divided into eight sections: The first, History, includes articles that trace this idea back to the moral treatment of Pinel and up to the earliest psychoanalytic work on the subject in this century. The second, Milieu Therapy: Theory and Practice, includes a variety of works treating diverse aspects of socioenvironmental treatment and administrative psychiatry. The third, Social Structure and Process, contains articles that emphasize sociological and social-psychological contributions to hospital psychiatry. The fourth and fifth, Psychoanalytic Approaches and The Therapeutic Community, respectively, treat these distinct approaches to milieu therapy in their conceptual and operational aspects. The sixth deals with the special case of Chronic Patients. The seventh treats Specific Management Issues, which seem to recur on psychiatric wards. The last section deals with a relatively new area of research, Assessment of Treatment Environments. The bibliography excludes literature on children, adolescents, and geriatric patients, as well as on alcoholics and drug addicts. No operant approaches to environmental treatment were included; such approaches are comparatively well known to psychologists and more readily accessible. Any seeming exceptions to these criteria result from an article having some transcendent interest beyond its specific subject group or method. The purpose of the bibliography is twofold: to introduce hospital clinicians to a literature of which, in its totality, many are ignorant; to provide a list of readings and a potential organization for a formal course on "Milieu Therapy and Ward Administration" to complement the on-the-job training that psychiatric residents and clinical psychology graduate student typically receive.

MS. 1294 (6 pages/paper: \$4; fiche: \$2)**Predicting Therapeutic Success in Patients Treated with Lithium Carbonate: The Need for a More Precise Diagnostic System**

DENNIS WILKERSON and ARNOLD LEUNES

Texas A&M University

A brief history of lithium as a psychoactive drug is presented, and its more recent specific use as a prophylactic cure for manic illness is outlined. The possibility of error in the diagnosis of manic illness is discussed.

with particular emphasis on the nontherapeutic effects of such a situation. Research that has yielded various predictors of successful lithium therapy is summarized, though seen by the authors to be of limited utility in the diagnostic process as it occurs with manic illness. The need for research focused on the development of a diagnostic tool that can be applied in an initial interview setting and utilizes the specific characteristics of the manic personality type is stressed.

MS. 1295 (48 pages/paper: \$5; fiche: \$2)

Methodological Issues in Psychotherapy Research

J. B. GOEBEL
Indiana University

Methodological issues concerning psychotherapy research are discussed. Three basic kinds of experimental designs are presented: (a) own control, (b) experimental and control groups, and (c) administration of different levels of one treatment or administration of different treatments. Discussion is given to the following major classes of psychotherapy variables and research methodology within each class: patient variables, therapist variables, patient-therapist interactions, treatment variables, and outcome measures. General design features are considered, especially control groups, the problem of remission, and internal and external validity. Finally, speculation is made regarding directions of future research, and a proposal for improving psychotherapy research and the application of results is offered. The proposal suggests establishing a national center for psychotherapy research that would establish a "periodic table" to provide a framework for suggesting areas of future research and for reporting completed research. Results would be compiled and regularly updated in the form of an encyclopedia. Users would be able to quickly determine what research had been conducted with what patient groups, techniques, therapist types, and results. Prospective researchers would be encouraged to submit their research proposals to the center for review and constructive criticism by a panel of experts before the research was conducted.

✓ **MS. 1296** (171 pages/paper: \$10; fiche: \$4)

Self-Control Skills Training: A Manual for Personal Development and Self-Help

STEVEN D. BROWN
San Mateo County Mental Health Services Division, San Mateo, California

The purpose of this manual is to provide clients of community mental health facilities with techniques and skills to bring about changes in their own behavior and that of others in their environment. The manual has been used for two years as a textbook for a program of self-control skills training offered in San Mateo County, California, community mental health facilities. The manual provides written instruction and homework exercises in five basic

self-management procedures: (a) progressive relaxation, (b) anxiety management training, (c) positive self-imagery, (d) assertiveness, and (e) operant reinforcement principles.

✓ **MS. 1297** (22 pages/paper: \$4; fiche: \$2)

University of Texas Alcohol and Drug-Related Survey

CAMPUS TASK FORCE ON THE ABUSE OF ALCOHOL AND
OTHER RELATED DRUGS

The University of Texas Alcohol and Drug Related Survey is an 82-item questionnaire designed to measure student responses in five areas of critical concern: (a) demographic information, (b) current drinking behaviors, (c) attitudes toward drinking, (d) general knowledge concerning excessive use of alcohol, and (e) knowledge of and willingness to use resources for help with a drinking problem. The questionnaire was designed by a committee representing members of the Counseling-Psychological Services Center, University Health Center, Community Mental Health Agencies, Texas Commission on Alcoholism, and Austin Council on Alcoholism. Both pilot and study data are available for a University of Texas stratified random sample of 400 students. The questionnaire is being widely distributed throughout Texas and the United States and represents a significant source of information regarding programming needs on the university and college campus.

✓ **MS. 1298** (19 pages/paper: \$4; fiche: \$2)

**Prediction of Drug Abuse by the Social
Factors Questionnaire**

JOSEPH L. WEEKS and CECIL J. MULLINS
Personnel Research Division, Lackland Air Force Base, Texas

U.S. AFHRL Interim Report, 1975 (July), No. TR-75-16.

Two measures, the lawlessness and permissiveness scores, yielded by a locally developed experimental psychological test were investigated to determine if they added significantly to the prediction of seven drug abuse criteria when combined with available demographic and aptitude variables. The results indicate that both scores add significant predictive variance to the background variables and appear to have considerable success in discriminating between drug abusers and nonabusers.

MS. 1299 (7 pages/paper: \$4; fiche: \$2)

Self-Directed Sexological Exam

LOUIS A. MOFFETT and PATRICIA K. ZINGHEIM
University of California School of Medicine, San Francisco

A sexological is a genital sensory examination that is used to desensitize couples to genital exploration, to familiarize partners with each other's sensual preferences, and to enhance their communication of these preferences. Relevant research is referenced and the advantages and disadvantages of therapist-directed versus self-directed sexologicals are discussed. The proper preparation of both therapists and clients for the sexological experience is described, and clinical considerations concerning timing and follow-up of this exercise in the context of sex and marital counseling are reviewed. Detailed written instructions are provided to guide clients in directing their own sexological exercise.

MS. 1300 (11 pages/paper: \$4; fiche: \$2)

Counseling and Death

JOHN R. BARRY
University of Georgia

Increasingly, helpers are asked to counsel the dying and their relatives. The research and other literature are reviewed for information and ideas that might be helpful to a counselor; for example, research and speculation about fears of death are examined. While an awareness of such information may reassure the counselor who tries to counsel in this area, it is even more important to help the client sort out and deal with his or her own feelings about death. Finally, counselors must be persons who by their actions, signal to the client that they care.

MS. 1301 (22 pages/paper: \$4; fiche: \$2)

**Framework for Scientific Practice and
Practitioner Training**

RICHARD J. COMTOIS and W. DONALD CLARK
Rutgers University

In order to help meet the need for scientifically based practice, as well as the need for a structure within which diverse approaches to practice can be encompassed, this article explicates the concept of scientific practice. The concept is developed as an organic combination of four subconcepts: the task of a practitioner, the scientific problem-solving process, the levels of intervention, and the methods and strategies of practice. Scientific practice is

presented in a matrix that is useful in applying the concept. Applications are presented for individual practitioners, training programs, and service delivery institutions as well as for establishing and organizing the research needed for the improvement of practice.

EDUCATIONAL PSYCHOLOGY

✓ **MS. 1302** (34 pages/paper: \$5; fiche: \$2)

Development of Stable Taxonomies of College Teacher Behaviors with the Critical Incident Technique

A. P. SCHWARTZ, W. W. RONAN, K. I. CARROLL, and G. D. BASKETT
Georgia Institute of Technology

The purpose of this research was to develop stable categories of college teacher performance. The data for developing these categories were collected by means of the critical incident technique. In three separate conditions, college students were asked to give critical incidents that they had observed of professors. In the first condition, critical incidents were requested by use of a very general question. In this condition, students were not specifically requested to confine their incidents to the classroom setting. Under this format, 2,663 critical incidents were collected. Using a qualitative sorting procedure, these incidents were sorted into six bipolar categories. Conditions II and III were designed to provide checks on possible sources of bias or distortion in Condition I. In Condition II, students were specifically requested to give incidents that reflected good teaching and had occurred in the classroom only. There were 77 such incidents collected. Using the categories derived in Condition I, these 77 incidents were found to fit well into the previously defined six categories. Condition III required students to report incidents that reflected good courses rather than good professors. There were 77 of these incidents collected. Upon qualitative sort, the six categories from Condition I proved insufficient to sort the 77 incidents in Condition III. To completely sort these incidents, three course-specific categories were added to the six original categories. Thus, students were found to be sensitive to this shift in instructions. Using a rank-order correlation to compare the relative frequency of reporting incidents falling in each category, it was found that all classes, freshman through senior, maintained the same rank order. Females, however, tended to report incidents relating to personal relationships more frequently than males. Effects of three personality variables were also checked. Among those students reporting incidents in Conditions II and III, it was found that variations in "authoritarianism," "internal-external locus of control," and "need for approval" appeared not to affect the category of incident they reported; that is, a person's place on these three personality variables did not appear to color the type of incident

he or she reported. The critical incident taxonomies developed seem to be robust. They offer an advance toward developing a behaviorally based rating scale for teachers.

MS. 1303 (48 pages/paper: \$5; fiche: \$2)

**Phase IV: A Modularized/Individualized Multimedia
Educational/Adolescent Psychology Course**

PHILIP LANGER
University of Colorado

The present report marks the fourth year of course development, and updates three previous manuscripts: Phase I (Ms. 437), Phase II (Ms. 790), and Phase III (Ms. 1131). The 1975-1976 program consisted of 52 text modules, 16 film modules, and 8 lecture/tape modules. These modules were combined into 55 instructional sequences across 13 content areas. All modules were structured as to format, and the text and film modules utilized commercially available materials. Data on 197 preservice interns, as well as 28 Army ROTC cadets, indicated an extremely high rate of achievement and course satisfaction. In addition, the course has been disseminated with parallel student achievement and satisfaction.

MS. 1304 (57 pages/paper: \$6; fiche: \$2)

Simulation Study of Stradaptive Ability Testing

C. DAVID VALE and DAVID J. WEISS
Psychometric Methods Program, University of Minnesota

Office of Naval Research Technical Report, 1975 (Dec), No. R.R. 75-6.

A conventional test and two forms of a stradaptive test were administered to thousands of simulated subjects by minicomputer. Characteristics of the three tests using several scoring techniques were investigated while varying the discriminating power of the items, the lengths of the tests, and the availability of prior information about the testee's ability level. The tests were evaluated in terms of their correlations with underlying ability, the amount of information they provided about ability, and the equiprecision of measurement they exhibited. Major findings were as follows: (a) scores on the conventional test correlated progressively less with ability as item-discriminating power was increased beyond $\alpha = 1.0$; (b) the conventional test provided increasingly poorer equiprecision of measurement as items became more discriminating; (c) these undesirable characteristics were not characteristic of scores on the stradaptive test; (d) the stradaptive test provided higher

score-ability correlations than the conventional test when item discriminations were high; (e) the stradaptive test provided more information and better equiprecision of measurement than the conventional test when test lengths and item discriminations were the same for the two strategies; (f) the use of valid prior ability estimates by stradaptive strategies resulted in scores that had better measurement characteristics than scores derived from a fixed entry point; (g) a Bayesian scoring technique implemented within the stradaptive testing strategy provided scores with good measurement characteristics; and (h) further research is necessary to develop improved flexible termination criteria for the stradaptive test.

MS. 1305 (51 pages/paper: \$6; fiche: \$2)

**Study of Computer-Administered Stradaptive
Ability Testing**

C. DAVID VALE and DAVID J. WEISS

Psychometric Methods Program, University of Minnesota

Office of Naval Research Technical Report, 1975 (Oct) No. R.R. 75-4.

A conventional vocabulary test and two forms of a stradaptive vocabulary test were administered by a time-shared computer system to undergraduate college students. The two stradaptive tests differed in that one counted question mark responses (i.e., omitted items) as incorrect and the other ignored items responded to with question marks. Stradaptive test scores were more consistent with the hypothesized nature of the population distribution of verbal ability. When corrected for differing levels of item discrimination and memory effects, the test-retest stabilities of the two testing strategies were about equal. Scores on one form of the stradaptive test were found to be very stable for testees who had highly consistent response records on initial testing. Stability of "subject characteristic curve" data was high, suggesting the usefulness of these data for describing test-testee interactions. Of the 10 stradaptive ability scores studied, which grouped into four clusters, average difficulty scores had the highest stabilities. Analysis of difficulties of items associated with correct, incorrect, and question mark responses suggested that items with question mark responses should not be ignored but should be treated as incorrect responses in branching decisions. Suggestions for future research on the stradaptive testing model are made.

MS. 1306 (67 pages/paper: \$6; fiche: \$2)
**Computerized Adaptive Trait Measurement:
Problems and Prospects**

NANCY E. BETZ, JAMES R. McBRIDE, JAMES B. SYMPSON,
and C. DAVID VALE
Psychometric Methods Program, University of Minnesota

With contributions by:
R. DARRELL BOCK and ROBERT L. LINN
Psychometric Methods Program, University of Minnesota

Edited by:
DAVID J. WEISS
Psychometric Methods Program, University of Minnesota

*Office of Naval Research Technical Report, 1975 (Nov), No. R.R. 75-5.
This paper is the proceedings of a symposium presented at the Eighty-Third
Annual Convention of the American Psychological Association, August
1975, Chicago, Illinois.*

This symposium consisted of four papers and the comments of two discussants. The first paper by C. David Vale, entitled "Problem: Strategies of Branching Through an Item Pool," describes a variety of strategies for adapting tests to the trait level of each individual on the basis of the testee's responses to previously administered items. Based on data from computer simulations, the various strategies are compared in terms of the levels and shapes of information curves they provide under one particular set of conditions. The second paper by James R. McBride entitled "Problem: Scoring Adaptive Tests," describes several approaches to scoring adaptive tests. Inapplicability of traditional number of correct scores in adaptive testing, where different individuals answer different items, is discussed. The essentials of latent trait theory are summarized, and two scoring methods usable with that approach are explicated. The third paper by James B. Sympson entitled "Problem: Evaluating the Results of Adaptive Testing," describes six component elements of a testing procedure. It is suggested that proper evaluation of a testing procedure should be based on consideration of these elements as separable components. Classes of criteria for evaluating a testing procedure are differentiated into validating criteria, theoretical criteria, psychosocial criteria, and cost criteria. The use of multiple criteria is briefly discussed and it is suggested that live testing and simulation research be systematically combined. The fourth paper by Nancy E. Betz, entitled "Prospects: New Types of Information and Psychological Implications," describes several types of new information available from computerized adaptive measurement. These include individualized error of measurement, response consistency, improved response modes, response latencies, and new kinds of tests. Data from live computerized testing are presented showing that response consistency moderates test-retest reliability. Robert L. Linn and R. Darrell Bock discuss some of the limitations of the research presented, some differing interpretations, and suggestions for future research in adaptive testing.

MS. 1307 (72 pages/paper: \$6; fiche: \$2)

**Empirical Investigation of the Stradaptive Testing Model
for the Measurement of Human Ability**

BRIAN K. WATERS

Flying Training Division, Williams Air Force Base, Arizona

U.S. AFHRL dissertation, 1975 (Oct), No. TR-75-27.

This study empirically investigated the validity and utility of the stratified adaptive computerized testing model (stradaptive) developed in 1973 by Weiss. The model presents a tailored testing strategy based upon Binet IQ measurement theory and Lord's (1972) modern test theory. Nationally normed School and College Ability Test Verbal analogy items (SCAT-V) were used to construct an item pool. Item difficulty and discrimination indices were rescaled to normal ogive parameters on 249 items. One hundred and three first-year student volunteers at Florida State University were randomly assigned to stradaptive or conventional test groups. Both groups were tested via cathode ray tube (CRT) terminals coupled to a Control Data Corporation 6500 computer. The conventional subjects took a SCAT-V test essentially as published, while the stradaptive group took individually tailored tests drawn from the same item pool. Results showed significantly higher reliability for the stradaptive group, and equivalent validity indices between stradaptive and conventional groups. Both KR-20 and parallel-forms reliabilities were computed for the stradaptive group. Three stradaptive testing strategies averaged 19.2, 26.5, and 31.5 items per subject, as compared with 48.4 items per conventional subject. A 50% reduction from conventional test length produced an equal precision of measurement for stradaptive subjects. Item latency comparisons showed the stradaptive group required significantly longer per item (about 11%) than conventional group members. The author recommended that time rather than number of items be used in future adaptive research as a dependent variable. Further investigation of the stradaptive model was recommended with comparisons between variable and fixed test termination rules.

MS. 1308 (12 pages/paper: \$4; fiche: \$2)

Publish or Perish: Myth or Matter

JOHN FOLLMAN

University of South Florida

A review of the empirical evidence concerning the commonly held higher education axiom of "publish or perish" is reported. The paper is divided into the following three sections: (a) a brief report of the very limited empirical evidence that "publish or perish" prevails, (b) a comprehensive compilation of empirical evidence that "publish or perish" is a myth and exists only at the few large institutions that grant most of the doctorates and at some additional emulating institutions, and (c) a two-page summary in question-answer format. Approximately 35 references are cited.

PERSONNEL AND INDUSTRIAL PSYCHOLOGY

MS. 1309 (36 pages/paper: \$5; fiche: \$2)

Validation of ASVAB-2 Against Civilian Vocational-Technical High School Criteria

HAROLD E. JENSEN and LONNIE D. VALENTINE, JR.
Personnel Research Division, Lackland Air Force Base, Texas

U.S. AFHRL Final Report, 1976 (Mar), No. TR-76-16.

This technical report presents the relationship between performance of high school students on the components and composites of the Armed Services Vocational Aptitude Battery (ASVAB-2) and their subsequent performance in civilian vocational-technical courses. Applicability of current Air Force composites to specific vocational categories is also presented.

MS. 1310 (21 pages/paper: \$4; fiche: \$2)

Comparison of Performance and Career Progression of High School Graduates and Nongraduates in the Air Force

JEFFREY E. KANTOR and NANCY GUINN
Personnel Research Division, Lackland Air Force Base, Texas

U.S. AFHRL Final Report, 1975 (Dec), No. TR-75-73.

The performance and career progression of a sample of 20,705 airmen were monitored throughout their initial tour of service. For comparative purposes, this sample was divided into high school graduate and nongraduate groups and further subdivided by Armed Forces Qualification Test (AFQT) mental categories. Points of comparison included disposition from basic military and technical training, attainment of skill levels, number of disciplinary actions and unsuitability discharges, and reenlistment decision. On almost all measures, high school graduates constituted a significantly more successful military group than did the nongraduates, and among the nongraduates, in terms of mental category subgroups, there were almost no differences in performance. In addition, the effects of varying enlistment requirements on this sample were presented, and attention was directed toward determining which nongraduates might be better risks than others for military service.

MS. 1311 (49 pages/paper: \$5; fiche: \$2)

**Symbolic Troubleshooting Tests: A Descriptive
and Methodological Review**

H. W. GUSTAFSON

American Telephone and Telegraph Company, New York City, New York

Following two decades of dormancy, interest in symbolic surrogates for job-performance measures may be starting to revive. In hope of aiding such revival, the present paper reviews the state of the art respecting symbolic troubleshooting tests circa 1957. All data available at that time on the psychometric properties of symbolic troubleshooting tests are summarized and compared. It is the author's opinion that the art has advanced very little, therefore the coverage of this review is still comprehensive and contemporary. Reliability coefficients in the vicinity of .70 appear generally achievable with symbolic troubleshooting tests provided that test scores do not depend on performance time. When performance time is involved in the scoring, reliability is degraded. Although the face validity of symbolic troubleshooting tests is clearly better than that of their pencil-and-paper counterparts, empirical validity coefficients are not. On the other hand, while symbolic tests tap cognitive skills primarily, they typically have been validated against overall troubleshooting performance, which encompasses more than just cognitive behavior. Thus, the evidence on validity is far from conclusive and further research is encouraged.

MS. 1312 (86 pages/paper: \$7; fiche: \$2)

**Development and Application of Absolute Scales
of Electronic Job Performance**

ARTHUR I. SIEGEL, DOUGLAS G. SCHULTZ,
and RICHARD S. LANTERMAN

Applied Psychological Services, Wayne, Pennsylvania

The development and logic of a technique for evaluating the performance level of Naval avionics technicians without reference to normative materials is described. The technique, which relates the performance level of the technician, as derived from a Guttman scale, to a series of fleet objectives, was found to be reliable and usable. The results of its application to a sample of Naval avionics technicians are described.

MS. 1313 (65 pages/paper: \$6; fiche: \$2)

**Posttraining Performance Criterion Development and Application:
The Development of Unidimensional Scales for the Dimensions
Derived from a Multidimensional Scale Analysis of the Job
of the Naval Aviation Electronics Technician**

DOUGLAS G. SCHULTZ and ARTHUR I. SIEGEL
Applied Psychological Services, Wayne, Pennsylvania

Four dimensions had previously been extracted in a multidimensional scaling analysis of the Naval aviation electronics technician's job at the entry level. The purpose of the present study was to construct unidimensional scales on each of these dimensions, utilizing methods developed earlier by Applied Psychological Services. For each dimension, a set of tasks was found that formed a scale as defined by both the Thurstone method of equal-appearing intervals and the Guttman technique.

MS. 1314 (89 pages/paper: \$7; fiche: \$2)

**Development of Performance Evaluative Measures:
Investigation into and Application of a Fleet
Posttraining Performance Evaluation System**

ARTHUR I. SIEGEL and PHILIP J. FEDERMAN
Applied Psychological Services, Wayne, Pennsylvania

Office of Naval Research Final Technical Report, 1970 (Sept).

Development and demonstration was attempted of an empirically rooted method, based on a sound measurement foundation, for providing feedback on the technical proficiency of Navy electronic maintenance personnel. The method relied largely on a personnel reliability index, modeled after an equipment reliability index. Specifically, the personnel reliability index is based on the compounding of probability of successful performance values for each of eight factorial-derived electronic job dimensions. It was held that the methods and techniques employed meet a series of psychometric and measurement criteria. Statistically significant differences were evidenced among the derived indices for the Naval ratings and job factors involved but not among the ships and the squadrons sampled. A second instrument that is based on a Guttman-scaled checklist and that yields an absolute measure of performance was also administered, and comparisons of the findings that resulted from the application of the two instruments are presented. The results and experience of the study were interpreted as indicating that the methods and data treatment techniques employed possess sufficient merit for their purpose to warrant trial use on a larger scale than was here involved.

MS. 1315 (147 pages/paper: \$9; fiche: \$4)

Police Performance Appraisal

FRANK J. LANDY and JAMES L. FARR
Pennsylvania State University

A literature review concerned with police department personnel decision systems revealed that performance appraisal was a critical problem for the job of municipal patrol officer. Two sets of behaviorally anchored rating scales were developed for the job-performance evaluation of patrol officers. One set, which in its final form consisted of eight job-performance dimension scales, was designed for use by supervisory officers to evaluate their subordinates. The other set, which in its final form consisted of nine job-performance dimension scales, was designed for use by patrol officers to evaluate their peers. A total of 58 police departments located throughout the United States cooperated in the development and field testing of the rating scales. Over 2,000 patrol officers were rated on the final form of the peer scales and over 2,500 patrol officers were rated on the final form of the supervisory scales. Data from these ratings were analyzed regarding interrater reliability of the scales, as well as the degree to which the scales were subject to common rating errors such as halo, central tendency, and leniency. In general, the psychometric characteristics of the scales indicated that the scales are suitable for use as appraisal instruments in municipal police departments. Specific instructions for the use of the behaviorally anchored rating scales are presented, as well as general comments concerning the nature and process of performance appraisal.

MS. 1316 (47 pages/paper: \$5; fiche: \$2)

**Behavioral Criteria and Potential Reinforcers for the
Engineer/Scientist in an Industrial Setting**

GARY P. LATHAM
Weyerhaeuser Company, Tacoma, Washington

TERENCE R. MITCHELL
University of Washington

Behavioral criteria for assessing the effectiveness of engineers/scientists in industry were developed from critical incident interviews. The behavioral criteria are based on 751 critical incidents. From these incidents, eight general performance criteria with satisfactory interjudge reliability and content validity were derived. These criteria are (a) planning and scheduling, (b) problem solving and analysis, (c) interactions with others, (d) communication, (e) perseverance and initiative, (f) professional objectivity, (g) leadership, and (h) job performance. Discrepancies between what engineers/scientists observed to be critical to their success or failure and that observed by their supervisors were identified. There was generally high agreement between supervisors and engineers/scientists as to what constitutes effective behavior, but there were several discrepancies between what the two groups observed as being ineffective. Bringing such discrepancies to the attention of both the supervisor (rater) and the employee should help to ensure more compre-

hensive and more productive performance appraisals in the future. The performance appraisal instrument is shown in an appendix. In addition, supervisors and engineers/scientists first listed, then rated, and finally ranked specific rewards ($N = 31$) they would like to receive for a job well done. These data were used to identify those reinforcers that could serve as incentives for good performance. These rewards would be made contingent upon emitting the previously identified effective behaviors. The results showed that there was substantial agreement as to what rewards were most highly favored. Whether one used ratings or rankings, engineers or scientists, or young or old employees, the results were the same. Financial benefits were considered to be among the most important reinforcers.

✓ **MS. 1317** (51 pages/paper: \$6; fiche: \$2)

Identifying and Developing Leadership Aspects of Effective Management in Team-Oriented Task Groups

WILLIAM M. FOX
University of Florida

Office of Naval Research Technical Report, 1974 (Mar), No. 70-4.

Leadership is distinguished from management and a review of key leadership studies is presented. Data on leadership styles are presented and problems in studying them are discussed. A normative model for leadership of team-oriented task groups based upon current research findings is presented. Documented lead-lag relationships between leader behaviors and various outcomes are examined. Managerial potential for behavior change and feedback approaches for effecting change toward the normative behaviors are discussed. Some 60 references to relevant research studies are given.

MS. 1318 (76 pages/paper: \$7; fiche: \$2)

Analysis of Military Leadership in a Realistic Field Setting

WILLIAM M. FOX
University of Florida

Office of Naval Research Technical Report, 1975 (Sept), No. 70-6.

A field study involving 583 ROTC summer camp platoon members and 104 acting platoon leaders produced significant behavioral differences between high- and low-performing leaders, and the way in which they were perceived by high- and low-stressed followers. Normative as well as descriptive data were collected and analyzed. High specific behavioral correlates with a consolidated leadership performance score were obtained. Clear-cut behavioral correlates of leader least-preferred co-worker (LPC) scores were also obtained.

ENGINEERING PSYCHOLOGY**MS. 1319** (13 pages/paper: \$4; fiche: \$2)**Human Resources as Engineering Design Criteria**

WILLIAM B. ASKREN

*Advanced Systems Division, Wright-Patterson Air Force Base, Ohio**U.S. AFHRL Professional Paper, 1976 (Mar), No. TR-76-1.*

The results of a number of studies that have been performed in an attempt to develop a technology for using human resources data as criteria in engineering design studies are summarized. Eight investigations conducted during the period 1966-1975 are briefly described. The results of the eight studies are integrated around six topics: (a) feasibility and practicality of using human resources data as criteria in engineering design, (b) methods for using data in design studies, (c) effect on the system of using the data as design criteria, (d) types of human resources data most relevant for use as design criteria, (e) methods for generating human resources data for use in design studies, and (f) nature of the engineering design process.

MS. 1320 (65 pages/paper: \$6; fiche: \$2)**United States Air Force Evaluation of an Automated Adaptive Flight Training System**

JAMES E. BROWN, WAYNE L. WAAG, and EDWARD E. EDDOWES

*Flying Training Division, Williams Air Force Base, Arizona**U.S. AFHRL Interim Report, 1975 (Oct), No. TR-75-55.*

The objectives of this study were (a) to evaluate the training effectiveness of the Automated Flight Training System (AFTS) in the F-4 training program; (b) to identify desired hardware and software modifications for operational AFTS devices; and (c) to identify effective methods of operational training use. The study was performed at Luke Air Force Base, Arizona, at the request of the Tactical Air Command (TAC). A class of 24 students assigned to F-4 combat crew was randomly divided into two equal-sized groups. One group received ground-controlled approach (GCA) training using the AFTS. The other group received normal GCA training from F-4 instructors. Performance data, questionnaire data, and maintenance data were collected and analyzed. Implications of the data for future use and procurement of additional systems are discussed.

MS. 1321 (34 pages/paper: \$5; fiche: \$2)

**Air Force Human Resources Laboratory Flying Training
Division Capabilities in Undergraduate Pilot Training
Simulation Research: Executive Summary**

W. G. MATHENY
Life Sciences, Inc.
Hurst, Texas

T. H. GRAY and B. K. WATERS
Flying Training Division
Williams Air Force Base, Arizona

U.S. AFHRL Final Report, 1975 (Aug), No. TR-75-26 (I).

A summary describing (a) the research capabilities of the Air Force Human Resources Laboratory/Flight Training Division (AFHRL/FT) with particular emphasis upon the advanced simulator for undergraduate pilot training (ASUPT), (b) the results of a prioritization of potential flying research issues by a panel of experts, (c) the contractor recommendations for initial AFHRL/FT experimental investigations, and (d) the AFHRL/FT facility utilization program for calendar year 1975 is presented. The concept of "performance equivalence" between simulator and aircraft is presented along with a description of suggested studies designed to validate the concept. Utilization of automated performance measures on both system output and pilot controls input forms an essential element of the model.

MS. 1322 (70 pages/paper: \$6; fiche: \$2)

**Advanced Simulation in Undergraduate Pilot Training:
Systems Integration**

D. F. LARSON and C. TERRY
Singer-Simulation Products Division, Binghamton, New York

U.S. AFHRL Final Report, 1975 (Oct), No. TR-75-59 (VII).

The Advanced Simulator for Undergraduate Pilot Training (ASUPT) is a research device designed for investigating the role of simulation in the future Undergraduate Pilot Training (UPT) program. For ASUPT to be effective in training research, it must faithfully simulate all aspects of flight. This includes not only the extracockpit visual cues, but also the motion and forces exerted on the pilot by the simulator, and all of the sights and sounds to which the pilot is accustomed. This report describes the integration of these sights, sounds, and motions into a coordinated, composite system—ASUPT. The problem is one of integrating two unlike components into one synchronized system. These two components are the Basic T-37 Simulators and their various subcomponents and the Computer Image Generator (CIG). This integration included not only the physical mating of the CIG system with the basic simulator computer, instructor-operator stations, visual displays, and cockpits, but also the computer software integration to make the visual scene correlate with the flight instruments and the real world. The problem represented the first of its kind in that it was the first fully digital visual system to be integrated with a state-of-the-art, high-fidelity flight simulator. The integration

was begun early in October of 1974 with the mating of the Basic Simulators and CIG general purpose computers. After this was accomplished, the test guide was trial run through November of 1974. Formal testing of the interface began in December of 1974 and the fully integrated ASUPT was accepted by the Air Force on January 17, 1975. This effort represents the first of its kind in simulation—the mating of a fully digital visual system with an advanced flight simulator. The success of this effort lies in the organization and maintenance of an Interface Control Document and the advance planning for the integration of the computer systems.

✓ **MS. 1323** (508 pages/paper: \$24; fiche: \$12)

**Psychological Behavioral Strategies for Accident Control:
A System for Diagnosis and Intervention**

Edited by:

THOMAS C. TUTTLE, G. DAVID WOOD, CRAIG B. GREETHER,
and DENNIS E. REED

Westinghouse Behavioral Services Center, Columbia, Maryland

The development of instruments and methodologies necessary to implement a behavioral approach to accident control is described. There are three parts to the methodology: (a) diagnosis, (b) tracing system, and (c) intervention strategy (action modules). The Diagnostic Safety Form (DSF) was developed to permit diagnosis of behaviors and conditions that have hazard potential. The DSF is a 399-item inventory designed to identify potential safety problems at the individual job level. Input in the safety diagnosis is obtained from incumbents, foremen/supervisors, and management personnel responsible for the safety and training functions. Procedures are developed for combining inputs from these four sources into a single diagnosis. The complete DSF is included in the report. The second phase of the process uses the DSF data to select a course of action. A computerized decision strategy called the "tracing system" permits the user to trace from a specific DSF-response profile to specific intervention strategies called "action modules." The tracing system is a quantitative method for combining a priori weights for DSF items with DSF item responses obtained during the diagnostic phase to arrive at a relevance score for each of 30 action modules. These relevance scores enable the user to rank order each of the action modules according to judged relevance to the conditions and behaviors encountered in the diagnosis. The final ingredient of the three-phase methodology is the set of action modules. Each action module represents a description of a specific technique for intervening in an organization to improve safety performance. There are 30 separate modules covering strategies. All are included along with three support modules covering job analysis, organization analysis, and person-analysis methods. The description of each module contains four sections: (a) purpose, (b) steps necessary to implement the technique, (c) factors to consider, and (d) recommendations for evaluating the obtained results. The content of the modules is derived largely from the previously developed behavioral safety guidelines (See Ms. 1324 and Ms. 1325.) When the implementation of one segment of a module requires special

expertise beyond that normally available inside a line organization, this is noted. However, the philosophy underlying the action modules is that control of the intervention process should remain with the user organization. As such, the system seeks to make maximum use of internal resources, using outside personnel only to perform specific tasks defined by the user organization's safety practitioner.

MS. 1324 (186 pages/paper: \$11; fiche: \$4)

Psychological Behavioral Strategy for Accident Control:

I. Development of Behavioral Safety Guidelines

Edited by:

THOMAS C. TUTTLE, CRAIG B. GREETHER, WILLIAM T. LIGGETT,
and NANCY E. KILLIAN

Westinghouse Behavioral Services Center, Columbia, Maryland

BRUCE L. MARGOLIS, WILLIAM KROES, and ALEXANDER COHEN
National Institute for Occupational Safety and Health, Cincinnati, Ohio

The general rationale underlying a behavioral approach to accident control and guidelines for the application of behavioral science knowledge to industrial safety problems are presented. The guidelines are based on an extensive review of research literature covering four areas of psychology: organizational, ergonomics, training, and behavior modification. The underlying rationale views organizations as systems and organizational effectiveness as a multidimensional concept having safety as one of its dimensions. Thus, the guidelines, although oriented toward safety, have applicability to other organizational outcomes as well. The report contains 19 guidelines in the organizational psychology area under the headings of (a) organizational objectives and policies, (b) job/individual compatibility, (c) group and interpersonal processes, (d) leadership, and (e) individual/organizational feedback. The 22 guidelines in the ergonomics area fall under the major headings of (a) work organization, (b) job characteristics and demands, (c) workplace design and layout, (d) task characteristics and demands, and (e) control-display characteristics. In the area of training there are 17 guidelines organized as follows: (a) transfer of training, (b) motivation and trainee behavior, (c) conditions of practice, and (d) special considerations related to training. The final section, behavior modification, presents 19 guidelines organized as follows: (a) consequences of behavior, (b) scheduling of consequences, (c) pitfalls in scheduling consequences, and (d) implementation-general considerations.

✓
MS. 1325 (51 pages/paper: \$6; fiche: \$2)

**Psychological Behavioral Strategy for Accident Control:
II. Applications of the Behavioral Safety Guidelines**

THOMAS C. TUTTLE, CRAIG B. GRETHOR, NANCY E. KILLIAN,
DENNIS E. REED, and WILLIAM T. LIGGETT
Westinghouse Behavioral Services Center, Columbia, Maryland

Examples from three target industries of specific safety problems that might be approached from the perspective of a behavioral approach to accident control are provided. Potential applications of the behavioral safety guidelines are presented to problems in underground coal mining, longshoring, and mobile-home manufacturing. The report is organized into five sections: (a) introduction, (b) selection of target industries, (c) mobile-home manufacturing, (d) marine cargo handling, and (e) underground bituminous-coal mining. The sections on the three industries include an overview and a discussion of behavioral approaches to identified safety problems. These discussions are not intended as a "cookbook," but are presented in an effort to provide an indication of the range of safety issues that are amenable to solution by behavioral science methods.

**Interdisciplinary Directory of Scientists Engaged in the Study of
Eye Movements—Third Edition:** Richard A. Monty and B. Diane
Eberly. See Ms. 1282, page 64.

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